REMARKS/ARGUMENTS

Claims 1, 5 – 12, and 16 – 22 are in the application. Reconsideration is respectfully requested.

Nature of the Claim Amendments

Applicant notes that the foregoing claim amendments are intended to comply with requirements of form expressly set forth in the Office action, and as discussed in the next section. Accordingly, entry of these amendments under 36 CFR §1.116(b) is respectfully requested.

Claim Rejections Under 35 USC § 112, Second Paragraph

Applicant believes that the foregoing claim amendments obviate the rejections made in paragraphs 2 – 5 of the Detailed Action. In particular, the word "substantially" has been removed from the claim language at the locations indicated in the claim listing.

As respects the Examiner's second comment made in paragraph 4 of the Detailed Action ("*if the Tm:YAG sample is within the resonant cavity, it is unclear how the Nd:YAG sample pumps the Tm:YAG sample.*"), applicant offers the following in response.

Claims 1 and 12 have been amended to make it more clear that the source of pumping radiation[1] comprises a resonant cavity that includes a first pair of members (such as the mirrors 4 and 5 of the embodiment shown in Fig. 1) and a pumped[2] Nd:YAG sample between those members.

The Tm:YAG sample is also located in the resonant cavity and between the reflective members to absorb some of the radiation that is produced by the source, which causes the Tm:YAG sample to emit the 2-μm radiation. The source, which includes the Nd:YAG sample and resonant cavity, thus pumps the Tm:YAG sample. The description of the Fig. 1 embodiment relating to pumping by the Nd:YAG sample appears in the application beginning with the final paragraph on page 6, through page 9. Applicant believes that the foregoing amendment and remarks clarify the how the Nd:YAG sample pumps the Tm:YAG sample.

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[1] For pumping the Tm:YAG sample.

[2] In one embodiment the Nd:YAG sample is separately pumped by a laser diode array that appear at item 6 in Fig. 1.

Rejection of Claims as Anticipated Under 35 USC § 102(b) by Jackson

Independent claims 1 and 12 of the present application were rejected as anticipated by Jackson. In this regard, the rejection grounds state that the claimed Tm:YAG sample is found in the Tm-doped silica fibre of Jackson.

In reply, applicant notes that the second paragraph of the present application specifies that the acronym "Tm:YAG" stands for a Thulium (a rare-earth element) doped, Yttrium Aluminum Garnet (synthetic compound). Accordingly, applicant submits that one of ordinary skill would not construe the "Tm:YAG" term specified in claim 1 to be a Tm-doped silica fibre. Thus, the claimed Tm:YAG sample is not found in the Jackson reference and, therefore, Jackson does not anticipate claim 1. (MPEP § 2131: *"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."* Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).)

Claim 1 also recites a resonant cavity that includes a pair of members that are reflective to 1 μm radiation, and a Nd:YAG sample interposed between those members. The Tm:YAG sample is also in the resonant cavity between the pair of reflective members. The Office action does not point out where in Jackson there is disclosed the claimed pair of reflective members between which is located the Nd:YAG sample. Nor does the Office action indicate where in Jackson there is disclosed the claimed resonant cavity that includes the first pair of members (with Nd:YAG interposed between them) and within which cavity is located a Tm:YAG sample (assuming, for the moment, that the Tm-doped silica fibre is a Tm:YAG sample). Accordingly, since the claimed resonant cavity, reflective members, and interposed Nd:YAG and Tm:YAG samples are not found in Jackson, the anticipation rejection of claim 1 and its dependent claims should be withdrawn.

Claim 12 specifies the step of providing a Tm:YAG sample. As noted above, Jackson does not use a Tm:YAG sample. Claim 12 also specifies the step of providing a resonant cavity that includes a first pair of reflective members with a Nd:YAG sample and a Tm:YAG sample located within that resonant cavity between the pair of reflective members. As noted, no such structure is expressly or inherently found in Jackson and, therefore, Jackson does not anticipate the method steps of providing such structure. Accordingly claim 12 and the claims depending therefrom are also allowable.

It is noteworthy that the arrangement of components defined in claims 1 and 12 provides a Tm:YAG sample inside of a resonant cavity of 1 μm waves that pass through the Tm:YAG rod many times. The resulting high intra-cavity densities of 1-μm photons between the first pair of reflective members will thus be absorbed by the Tm:YAG sample. This is explained, for example, in the last paragraph of page 8 of the specification. There is nothing in Jackson to suggest that the gain-switched fiber laser configuration described there be transformed into what is defined in the present claims.

Rejection of Claims as Obvious Under 35 USC § 103(a) in View of Zayhowski and Hanna

Claims 1, 5 – 12, and 16 – 22 were rejected as obvious in view Zayhowski when combined with Hanna. In response, applicant submits that a proper case of *prima facie* obviousness has not been made, and the rejection should be withdrawn, as explained more below.

The MPEP, in section 2143.03 notes that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "*All words in a claim must be considered in judging the patentability of that claim against the prior art.*" *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

In the grounds relating to the present rejection the Examiner states that Zayhowski, as shown in Figure 1, teaches a device comprising a solid-state YAG sample 143, and a source of pumping radiation having a wavelength of 1 μm. The source of pumping radiation is said to comprise a resonant cavity composed of a Nd:YAG sample 141 and a pair of first members 131, 132 that are reflective to radiation having a wavelength of 1 μm. The Nd:YAG sample is interposed between the first pair of members 131, 132.

The Examiner also, however, states that the resonant cavity has a solid-state YAG sample 143 located therein. Applicant notes, however, that the foregoing clarifying amendments to claims 1 and 12 show that, in order for the Tm:YAG sample to absorb the reflected 1 μm radiation as claimed, the Tm:YAG sample is located within the resonant cavity and between the members that reflect that radiation. Zayhowski, on the other hand, makes no mention of a resonant cavity within which is located a Tm:YAG sample between reflective members, and between which reflective members the pumping Nd:YAG is also located. Moreover, there is no suggestion in Zayhowski or

any other reference of record for reconstructing the arrangement shown there[3] to match what is claimed.

In view of the foregoing, applicant submits that a *prima facie* obviousness has not been made because all of the claim limitations are not taught or suggested by the prior art. Accordingly, applicant requests that the rejection be withdrawn.

Conclusion

In view of the foregoing, applicant submits that all of the present claims are in condition for allowance, and an early notification to that effect is respectfully requested. If the Examiner has any questions, he is invited to contact applicant's attorney at the below-listed telephone number.

Respectfully submitted,
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[3] Looking at Figure 1 of Zayhowski, it is clear that the sample 143 is not located between the first pair of members 131, 132 but is instead located a short distance away between an entirely different pair of members 133, 134.